# Transmission System Reliability Projects Illinois District (2001 - 2004)

## **Sub 48 – 13 kV Switchgear Addition** (Silvis, Illinois)

This project was initiated in 2000 and included in the 1999 Annual Report. It involves adding 13 kV switchgear to utilize 161-13 kV transformer capacity to serve local area load. This improvement will increase reliability of service to the surrounding load and will reduce loading on 161/69 kV transformation in the area. Preliminary engineering for the project was completed in 2000. The project is on schedule to be completed June, 2001.

Budgeted Cost: \$356,500 in 2001

# Distribution System Reliability Projects Illinois District (2001 - 2004)

## Substation 48 13 kV Feeder Exits (new feeder exits, East Moline, Illinois)

This project was initiated in 2000 and included in the 1999 Annual Report. Two feeder exits are currently under construction and a third feeder exit will be started in late 2001 or early 2002. This project will allow unused transformer capacity at Sub 48 to be utilized to transfer loads from four adjacent substations (Substations E, 37, 46 and 47). The circuits will improve reliability by decreasing the loads on adjacent feeders, and creating smaller circuits that help sectionalize the system, so fewer customers are affected in the event of an outage.

Budgeted Cost: \$125,000 in 2001 \$175,000 in 2002

#### 4 kV to 13 kV Conversion (Sub 23, circuits 4-23-4, 4-23-1, Moline, Illinois)

This is an ongoing project included in both the 1998 and 1999 Annual Reports. The conversion of the 4 kV overhead distribution system continues with the conversion of circuit 4-23-4 on 27<sup>th</sup> Avenue, east of 38<sup>th</sup> Street in Rock Island. Future plans include the conversion of 4-20-3 and 4-U-1 in 2002, followed by 4-U-2 and 4-20-2 in 2003. Additional radial circuits around all remaining subs would then be converted in following years, leaving the main tie circuits between the subs to be converted last. The goal for the 4 kV system in Rock Island and Moline is to convert Substations 20 and 23 and a majority of their associated circuits by 2003.

Budgeted Cost: \$64,000 in 2001

\$65,000 in 2002 \$75,000 in 2003 \$75,000 in 2004

<u>Sherrard Area Voltage Regulator Installations</u> (13-111-3, Mercer County & 13-112-3, Rock Island County)

Install voltage regulators on circuits 13-111-3 and 13-112-3 to improve voltage regulation and proactively address power quality issues. This project was completed in spring 2001.

Completed Cost: \$102,602 in 2001

**Underground Cable Replacement Projects** (Coal Valley, Moline, East Moline and Orion)

Underground primary cable is replaced as it reaches end of its life and failure rates reach unacceptable levels. Five projects were completed in 2000 in the Coal Valley, Moline, East Moline, and Orion areas at a total cost of \$68,133. Amounts budgeted for future years include:

Budgeted Cost: \$125,000 in 2001

\$100,000 in 2002 \$100,000 in 2003 \$170,000 in 2004

# <u>Distribution Circuit Reliability Improvement Projects</u> (Moline, East Moline, Milan, Port Byron/Rapids City, and Orion areas)

Reliability statistics are reviewed for the worst performing circuits throughout the MEC service territory and plans are formulated to address the specific reliability problems on each. For 2001/2002 nine circuits have been identified for improvement projects in Illinois. The nine circuits include: 13-14-1, 13-36-3, 13-37-1, 13-47-1, 13-S-1, 13-101-2, 13-101-1, 13-101-4, and 13-102-3. These circuits serve areas in the Moline, East Moline, Milan, Port Byron/Rapids City, and Orion areas. Types of improvements typically consist of one or more of the following: addition of more fuse points to better sectionalize circuits, arrester additions, recloser additions, infrastructure rebuilds or replacements, overhead line relocations out of ravines, pole by pole circuit inspections from aerial trucks, and squirrel guard installations.

Budgeted Cost: \$135,000 in 2001/2002

#### **Distribution Automation** (Various locations in Illinois)

This project involves the implementation of the following distribution automation functions:

# Automated Centralized Capacitor Control System

- o Software and communications system remotely controls feeder capacitor banks based on actual VAR flow at the feeder or transformer.
- o Improves VAR support on the distribution system.
- o Planned to be implemented on Sub 22 and Sub 37 in 2001.

## Service Restoration: Automatic Outage Detection and Notification Devices

- o System utilizes a device placed in a customer's home to automatically report a customer outage to MidAmerican's EOMS.
- o Expected to reduce outage notification time.
- o Will first be implemented in the homes of employee volunteers in Illinois in 2001.

# Service Restoration: Remote/Automatic Switching

 Control and communication system can automatically or remotely control automated feeder switches. Two feeders would be tied with a normally open automated switch and each feeder also has a normally closed automated switch. For main feeder faults, the faulted section is isolated. Service is restored to the unfaulted section when possible.

- o Improves restoration time for outages affecting a main feeder trunk.
- o Planned to be implemented on at least two feeder pairs in Illinois in 2001.

# Service Restoration: Remote Fault Indicators

- System utilizes fault indicators on main feeder sections. If a fault is detected, the indicators report to MidAmerican's EMS or other centralized location via a communication system.
- o Improves restoration time by determining what feeder half the problem is on.
- o Planned to be implemented on selected feeders in Illinois in 2001.

Budgeted Cost: \$315,000 in 2001

\$100,000 over 2002-2004